

FUNCTIONAL ASSESSMENT OF WETLANDS

One Method of Assessing Wetland Functions

OBJECTIVES

Define:

Wetland Functions & Wetland Values

Describe:

the basic principles & application steps of a functional approach to wetland assessment & its use as a tool for wetland restoration & enhancement

Participate:

knowledgeably in field exercises that apply simple assessment models to reference & degraded wetlands in order to understand their structure & function

Applications of a Functional Assessment

- Evaluate the reference wetlands used in planning.
- Use as a planning tool to identify key features necessary to provide specific functions.
- Evaluate project sites to determine the conditions before and after plan implementation.
- Use as a tool to determine whether the planned functions exist or corrective action is necessary.

Wetland Function

- Simply defined: Just the things that wetlands do.
- Some may benefit us, others may benefit something else, some we don't know about.
- Wetland functions result from the processes & interactions occurring in wetland ecosystems.

Wetland Ecosystems

Process 1
Process 2
Process 3
Process 4
↓
Wetland Function

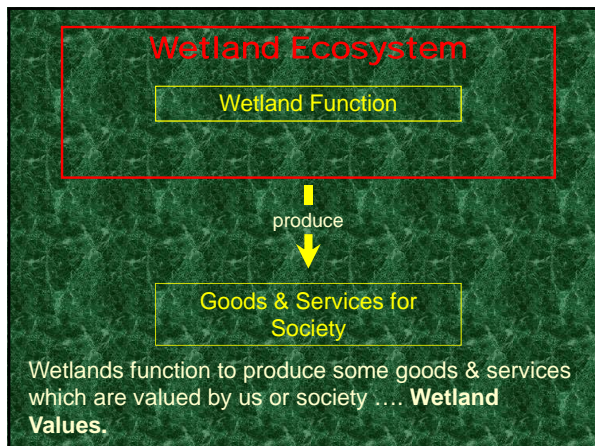
Tree growth
Tree density
Seed production
Seed predation
↓
Wildlife Habitat

Wetland functions are labels we give to sets of wetland ecosystem processes.

Wetlands are embedded within an ecosystem matrix

Forest
Forest wetland

Prairie
Prairie wetland



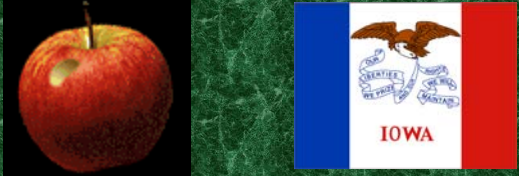
Value

The qualities that make an object useful or desirable.

- Intrinsic
- Functional

Intrinsic Value

The value of an object, idea, or action based upon personal or society's perspective.



Functional Value

The value of an object based upon the function, utility, or use.



Wetland Value

The qualities that make wetlands useful and desirable, including the ability to perform useful functions.

- aesthetics
- recreation
- passive enjoyment
- fisheries
- peat mining
- wildlife habitat

II. Wetland Functional Assessment

- Definition
- Set-up
- Components
- Operation

Functional Assessment

Defined – The method by which the capacity of a wetland to perform a function is measured.

i.e., how well is it doing any one, or all, of its functions.

Wetland Functional Assessment Scheme

- Geomorphic setting - landscape position
- Water source & transport vector - where did it come from (ppt, upstream, groundwater) & which way did it go (atmospheric, lateral, phreatic)
- Hydrodynamics – including velocity (bilateral (tidal), unidirectional (stream), vertical (evap./recharge))

Wetland Assessment: Classes

- **DEPRESSION**
- **FRINGE** (LACUSTRINE & ESTUARINE FRINGE)
- **SLOPE**
- **FLATS** (MINERAL & ORGANIC SOIL FLATS)
- **RIVERINE**

Example regional subclasses for DEPRESSION Wetlands

- Vernal pools in California
- Kettle-hole bogs in New England
- Prairie Potholes in North Dakota
- Basin wetlands in Nebraska
- Playa lakes in west Texas
- Cypress domes in Florida
- Carolina bays in North Carolina

Reference Condition

In order to calibrate the functions, Reference Sites must be assessed.

- Reference Standard – (the best available)
- Reference Wetlands - (those used to evaluate)
- Reference Domain - (the geographic area)

Defining the Wetland Assessment Area (WAA & PWAA)

Important to note that each community type must be assessed separately

- Wetland Assessment Area (WAA)
- Partial Wetland Assessment Area (PWAA)



Assessment Methodology

Functional Assessment Model

- Composed of **Functions** & **Variables**
- Rate wetlands function by function
- Variables define functions

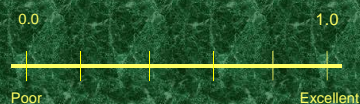
Functional Capacity

- Defined: The degree or magnitude that an area of wetland performs a function, or is capable of performing a function.
- Functions are rated based upon the performance of several variables (or processes) that make up the function.

Functional Capacity Index

The Final Score for a Variable

FCI: A numerical value which rates the Functional Capacity of a Variable or Function.



Example

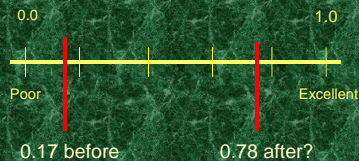
Habitat Function 1: Maintain Characteristic Plant Community

Index of Function: $(Vpcomp + Vregen + Vherb + Vinvasive) / 4$

Vregen: Regeneration Success of Characteristic Plant Species			
Measure Standardized to Reference	Base-Condition	Planned-Condition	Comment and Notes
Seedlings/saplings/clonal shoots of 6 or more species listed in Vpcomp are present.	1		
Regeneration of 3-6 of the above species	0.5		
Regeneration of <3 of the above species	0.1		
Tree/sapling/clonal shoots essentially absent; restoration is not possible	0		

Functional Capacity Index

The Final Score



Functional Assessment Uses

- Assess *pristine/reference* sites
- Assess degraded wetlands to be restored
- Develop restoration plans using functions / variables
- Assess wetland progress and success / failures

Review the Functional
Assessment Method We
will be using in this
Class.
